AD-A041 733 ARIZONA STATE UNIV TEMPE DEPT OF EDUCATIONAL TECHNOLOGY F/G 5/10
LEARNING INCENTIVES PREFERRED BY UNIVERSITY STUDENTS.(U)
MAY 77 M J BEBEAU, H J SULLIVAN, J L EUBANKS F41609-75-C-0028
UNCLASSIFIED AFHRL-TR-77-9 PSYCHOLOGY) NL

1 OF 1
AD A041733

END

DATE
FILMED
8 - 77

AFHRL-TR-77-9

AIR FORCE HUMAN RESOURCES LABORATORY

LEARNING INCENTIVES PREFERRED BY UNIVERSITY STUDENTS

By

Muriel J. Bebeau
Howard J. Sullivan
James L. Eubanks

Department of Educational Technology ~~and Library Science~~
Arizona State University
Tempe, Arizona 85281

FLYING TRAINING DIVISION
Williams Air Force Base, Arizona 85224

May 1977
Interim Report for Period 1 July 1975 – 30 June 1976

AIR FORCE SYSTEMS COMMAND
BROOKS AIR FORCE BASE, TEXAS 78235

NOTICE

When US Government drawings, specifications, or other data are used for any purpose other than a definitely related Government procurement operation, the Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

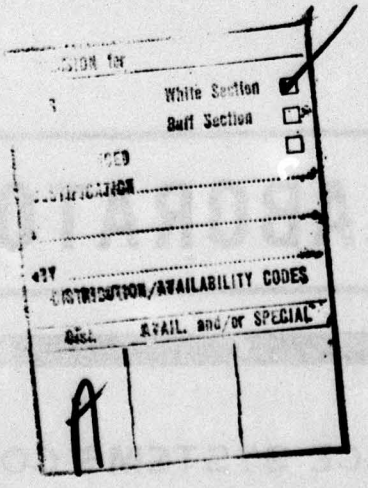
This interim report was submitted by Arizona State University, Tempe, Arizona 85281, under contract F41609-75-C-0028, project 2313, with Flying Training Division, Air Force Human Resources Laboratory (AFSC), Williams Air Force Base, Arizona 85224. Mr. Gary B. Reid, Training Innovations Branch, was the contract monitor.

This report has been reviewed and cleared for open publication and/or public release by the appropriate Office of Information (OI) in accordance with AFR 190-17 and DoDD 5230.9. There is no objection to unlimited distribution of this report to the public at large, or by DDC to the National Technical Information Service (NTIS).

This technical report has been reviewed and is approved for publication.

EDWARD E. EDDOWES, Technical Adviser
Flying Training Division

DAN D. FULGHAM, Colonel, USAF
Commander



Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER: AFHRL-TR-77-9	2. GOVT ACCESSION NO.
3. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle): LEARNING INCENTIVES PREFERRED BY UNIVERSITY STUDENTS	5. TYPE OF REPORT & PERIOD COVERED: Interim rept. 1 Jul 75 – 30 Jun 76
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Muriel J. Bebeau, Howard J. Sullivan, James L. Eubanks	8. CONTRACT OR GRANT NUMBER(s): F41609-75-C-0028
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Department of Educational Technology ~~and Library Science~~, Arizona State University, Tempe, Arizona 85281	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: 61102F, 2313T501, T5
11. CONTROLLING OFFICE NAME AND ADDRESS: Flying Training Division, Air Force Human Resources Laboratory, Williams Air Force Base, Arizona 85224	12. REPORT DATE: May 77
	13. NUMBER OF PAGES: 14
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): HQ Air Force Human Resources Laboratory (AFSC), Brooks Air Force Base, Texas 78235	15. SECURITY CLASS. (of this report): Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

educational incentives
incentive preferences
learning incentives
motivation

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This study involved an extension of the data base from an earlier incentive survey describing student preferences for incentives commonly available for use by instructors to promote good achievement in course work. Three hundred and eighty-five College of Education students rated ten incentives on 45 paired-comparison items and on a seven-point rating scale. "Release from final examination" was most preferred, "no reward at all" was least preferred, and "assisting the instructor as proctor" ranked ninth among the ten incentives. Consistency of ratings was high within subjects on the paired-comparison items, between the paired-comparison and rating-scale methods (r = .98), and between education and introductory psychology student samples (r = .99).

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified 409 075

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

PREFACE

This research was conducted under project 2313, Human Resources; task 2313-T5, Information Processing and Cognitive Components of the Flying Task.

Air Force training programs frequently use extrinsic incentives and competition (e.g., class standing) as motivators. This basic research, while dealing with incentives somewhat different than those used in Air Force training, is directed toward developing how these types of incentives function and how they might be employed more effectively. The research was carried out under provisions of contract F41609-75-C-0028 by the Department of Educational Technology and Library Science, Arizona State University. The contract monitor was Gary B. Reid.

Table of Contents

	Page
Introduction	3
Method	4
Subjects	4
Instrument	4
Procedures	4
Results	5
Paired Comparisons	5
Scale Ratings	5
Discussion	9
References	10

List of Figures

Figure		Page
1	Scale values for each of 10 incentives derived from paired comparisons	6
2	Mean values for 10 incentives derived through rating on a 7-point scale	8

List of Tables

Table		Page
1	Pair-by-Pair Preferences	7

LEARNING INCENTIVES PREFERRED BY UNIVERSITY STUDENTS

Introduction

What motivates a student to try hard in a course? Is it primarily the prospect of the final course grade? What other factors under the control of the instructor are potentially effective incentives? Answers to such questions are important because they enable an instructor to select incentives and design strategies for promoting student effort and achievement.

Instructors differ considerably in their attempts to influence students to perform well in their courses. Many instructors offer incentives in addition to grades for good performance, while others do not. A frequent practice in secondary schools is to release students from the final examination for a semester if they have maintained a given grade-point average during the semester. In many personalized system of instruction (PSI) courses, high-achieving students are offered the opportunity to serve as course proctors. Students who complete a given number of lessons ahead of schedule in a computer assisted instruction course at the University of Illinois (Anderson, 1975) are given first choice among a selection of seminars included in the course. Positive comments (Page, 1958) and bonus points toward a grade are other commonly used incentives.

The effect of an incentive on student achievement appears to be closely related to the student's perception of the desirability of the incentives (Sullivan, Schutz, & Baker, 1971). Until recently, however, no data were available on the preferences of students for incentives that are commonly available for use by an instructor. A recent survey (Bebeau, Eubanks, & Sullivan, 1976) of 369 college freshmen in an introductory psychology course revealed that release from the course final examination was the most preferred of nine such commonly available incentives. "Assisting the instructor as a proctor" was the least preferred incentive, ranking just above "no reward at all."

The present study was conducted to determine the preferences of upper-division undergraduate students in a College of Education for incentives commonly available for use by an instructor. The study involved an extension of the data base from the incentive preference survey, cited previously, to a different sample of university students. It was planned that data from the present study would subsequently be used to select most preferred and least preferred incentives for experimental investigations of their effects on the achievement of College of Education students. Air Force training programs frequently use extrinsic incentives and competition (e.g., class standing) as motivators. This basic research, while dealing with incentives somewhat different than those used in Air Force training, is directed toward developing how these types of incentives function and how they might be employed more effectively.

Method

Subjects

The sample consisted of 385 education majors, 125 males and 260 females, enrolled in several different courses in the College of Education at Arizona State University.

Instrument

The two-part incentive preference scale used in the Bebeau, Eubanks, and Sullivan study (1976) was used for data collection purposes. The first part of the scale requires students to rank incentives on a paired-comparison basis. For each of the 45 paired-comparison items, students select the incentive most preferred as a reward for doing good work. On the second part of the scale, students rate each incentive using a seven-point scale with the following directions:

> Circle the number which represents how you would feel if each method described were used to motivate you to do your best in a course.

The incentives used to form the scale are:

(1) release from taking a final examination,
(2) release from attending future class sessions,
(3) receiving a letter grade indicating the quality of work,
(4) receiving points toward a course grade,
(5) having work recognized in department publications,
(6) assisting the instructor as proctor,
(7) receiving positive comments from the instructor,
(8) participating in a group discussion with an authority on a class topic,
(9) participating in course-related field trips, and
(10) no reward at all.

Procedures

The scale was administered to intact groups of students enrolled in education courses during regularly scheduled class periods. All students present in each session voluntarily completed the incentive preference scale in approximately 10 minutes. Students completed the scale four weeks before the end of the spring semester.

Results

Paired Comparisons

Figure 1 shows a graphic representation of scale values, using the Case V model (Edwards, 1957) obtained for each incentive from the 45 paired-comparison items. As with an earlier ranking by introductory psychology students, "release from final examination" was by far the most preferred incentive. "No reward at all" was least preferred, and "assisting the instructor as proctor" again ranked just above it in ninth position. Ratings for each incentive on a pair-by-pair basis, along with the discriminal dispersion for each incentive, are shown in Table 1.

The between-subject consistency of paired-comparison ratings (i.e., the degree to which subjects showed the same preference pattern) is indicated by u, the coefficient of agreement. Kendall's Test was employed to test the obtained coefficient of .2228 for significance. The resulting χ^2 of 3915.7, $df = 45$, $p < .0000$ revealed that the agreement among raters was highly significant.

The within-subject consistency of ratings is indicated by the percentage of subjects who obtained significant coefficients of consistency (zeta). Ninety percent of the subjects had zeta values greater than .80, $p < .0005$, and only one subject had a value less than .45, $p < .05$. Within-subject ratings on the paired comparison, therefore, were highly consistent.

The Pearson product-moment correlation between the scale values obtained from the present sample of education students and the earlier sample of introductory psychology students was .99. Since all correlations for the within-sample categories (time, sex, GPA, and age) were .92 or above in the earlier study and the correlation between the two samples was nearly perfect, no further comparison of within-sample categories was made.

Scale Ratings

The mean ratings for each incentive on the seven-point rating scale are shown in Figure 2. "Release from final examination" was again the most preferred, with a mean rating of 2.09. "No reward at all" and "assisting the instructor as proctor" were again least preferred. The Pearson product-moment correlation between the scale values of the incentives obtained from the paired-comparison preferences and from the mean ratings on the seven-point scale was .96, indicating high consistency between preferences as assessed by the paired comparison and rating scale methods.

The Pearson product-moment correlation between the scale values obtained from the present sample and the earlier sample of introductory psychology students was .98.

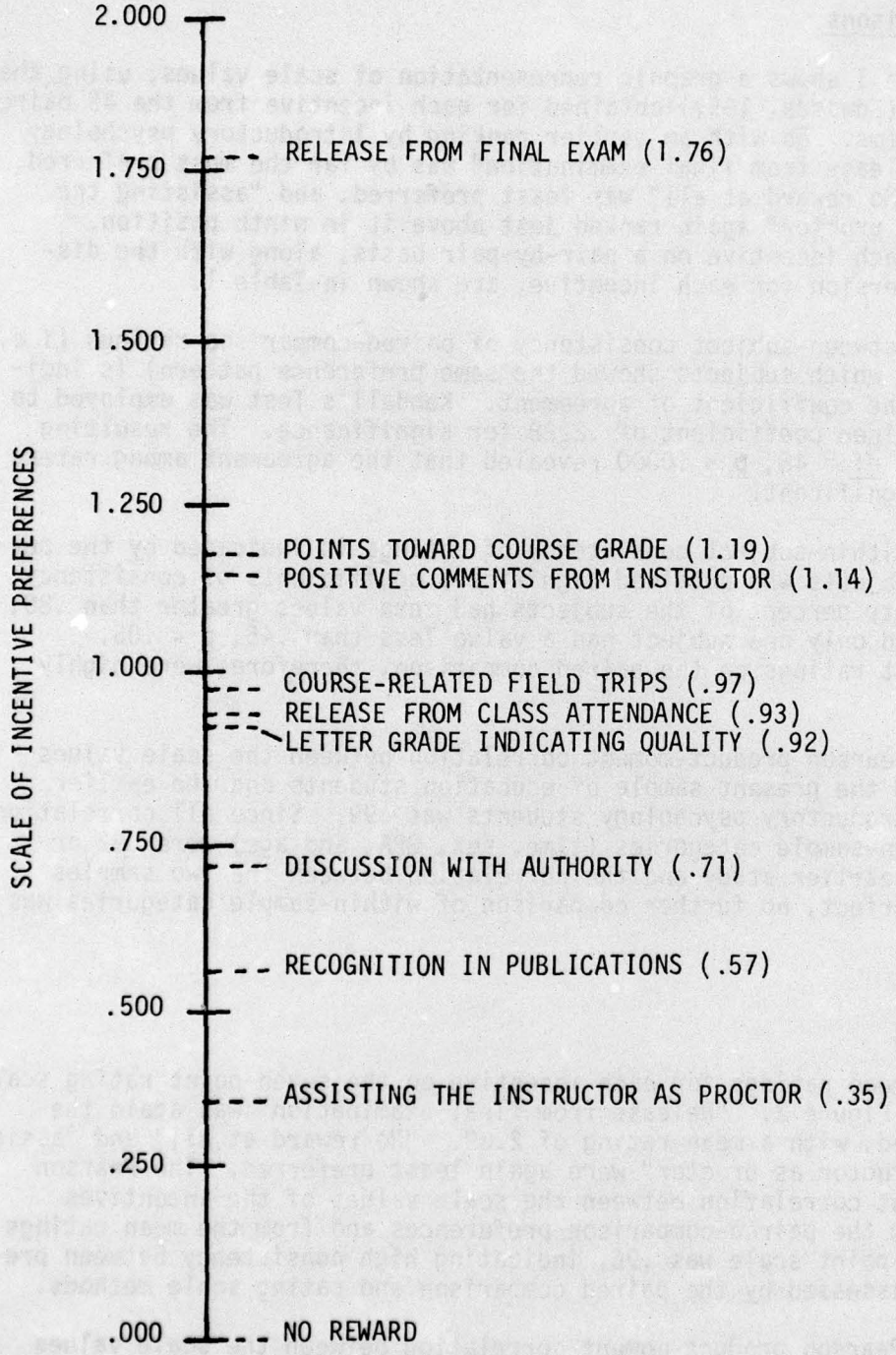


Figure 1. Scale values for each of 10 incentives derived from paired comparisons

Table 1

Pair-by-Pair Preferences*

	Incentive	1	2	3	4	5	6	7	8	9	10
1	RELEASE FROM FINAL EXAM	--	.10	.20	.25	.12	.11	.24	.21	.24	.06
2	RELEASE FROM CLASS ATTENDANCE	.90	--	.47	.60	.35	.28	.53	.41	.45	.15
3	LETTER GRADE INDICATING QUALITY	.80	.53	--	.60	.32	.31	.62	.40	.55	.15
4	POINTS TOWARD COURSE GRADE	.75	.40	.40	--	.22	.24	.44	.33	.45	.10
5	RECOGNITION IN PUBLICATIONS	.88	.65	.68	.78	--	.41	.70	.55	.57	.30
6	ASSISTING THE INSTRUCTOR AS PROCTOR	.89	.72	.69	.76	.60	--	.80	.68	.74	.41
7	POSITIVE COMMENTS FROM INSTRUCTOR	.76	.47	.38	.56	.31	.20	--	.35	.49	.06
8	DISCUSSION WITH AUTHORITY	.79	.59	.60	.67	.46	.32	.65	--	.67	.29
9	COURSE-RELATED FIELD TRIPS	.76	.55	.45	.55	.44	.26	.51	.33	--	.22
10	NO REWARD	.94	.85	.85	.90	.70	.59	.94	.71	.78	--
	Sums	7.47	4.86	4.72	5.67	3.52	2.72	5.43	3.97	4.94	1.74
	Rank Order	1	5	6	2	8	9	3	7	4	10
	Discriminal Dispersions	1.20	.62	.88	.86	1.01	1.36	.57	1.29	1.31	.86

*The table shows the proportion of times that the column incentive was preferred to the row incentive. For example, .90 in Column 1, Row 2 indicates that release from final examination was selected over release from future class sessions by 90 percent of the subjects.

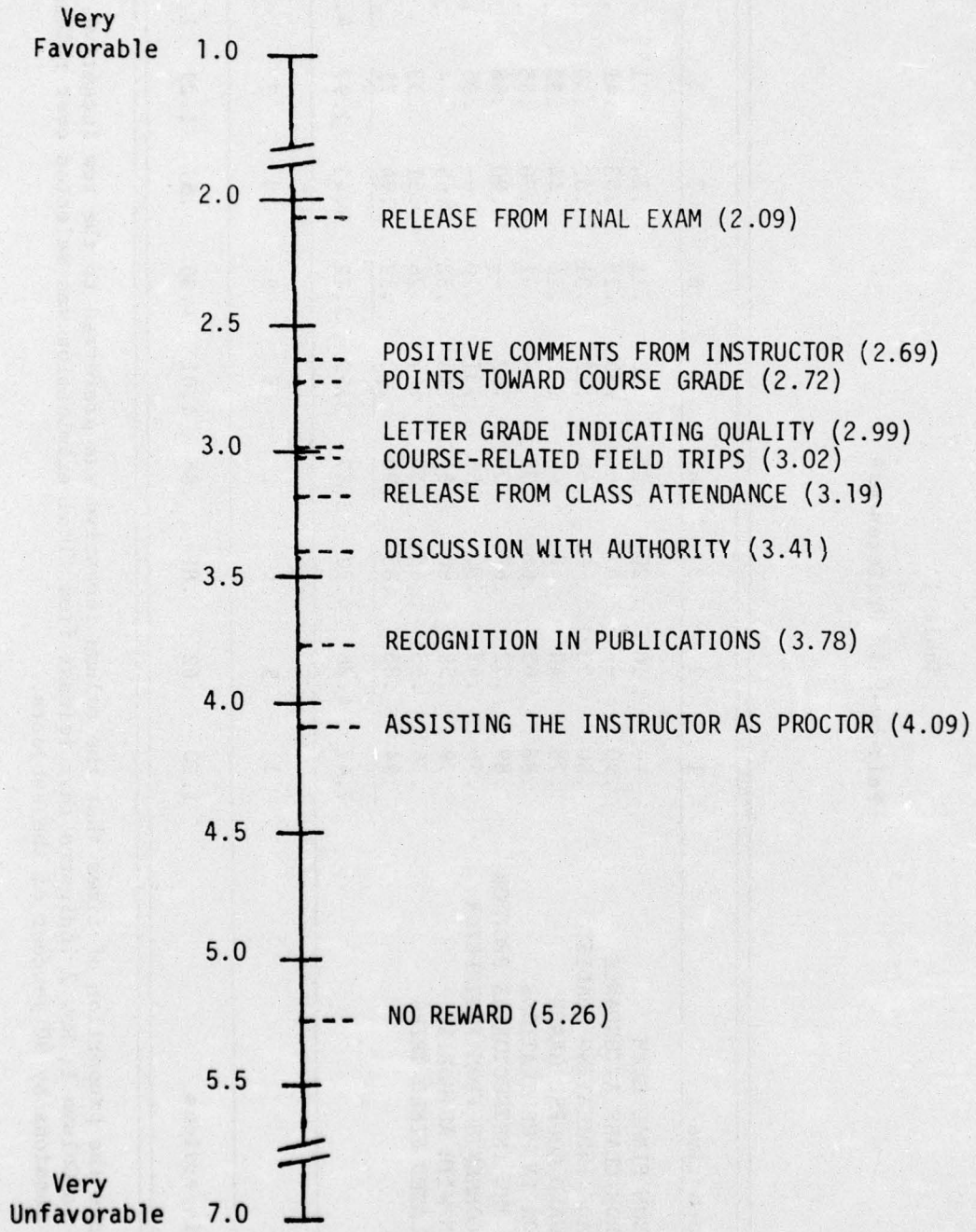


Figure 2. Mean values for 10 incentives derived through rating on a 7-point scale

Discussion

Scale values obtained from student responses to paired-comparison items and from student ratings indicate a consistent pattern of preferences for the incentives rated in the present study. "Release from final examination" was the most preferred incentive. The high degree of consistency between students in the College of Education and students enrolled in the required introductory psychology course indicates consistent preferences across academic areas.

The present data extend the findings of the earlier study and provide instructors with a basis for the selection of incentives for use in their courses. Student preferences across levels and academic areas indicate that the opportunity to earn release from the course final examination appears to be a potentially effective incentive for motivating students to perform well during the course. The second most preferred incentive--"points toward the course grade"--could easily be used in conjunction with release from the final examination.

Student attitudes toward course-related field trips, discussions with an authority on a class topic, and recognition in publications are of interest because of the proportion of students (22 to 30 percent) that preferred "no reward" to these incentives. The desirability of these incentives may depend heavily on the nature of the field trip, the eminence of the authority or the nature of the publication recognition. These incentives might be expected to have much more appeal for students who are already interested in the course content than for those who are not.

The high percentage of students who prefer no reward to assisting the instructor as proctor (41 percent) raises doubts about the potential effectiveness of the latter item as an incentive. It would seem prudent for an instructor to determine individual preferences for serving as a proctor and/or to attempt to develop favorable attitudes toward it before offering it as a possible incentive for high achievement. The lack of appeal for assisting the instructor as proctor as well as for course-related field trips and discussions with an authority may be related to the fact that the "reward" for achievement appears to be an opportunity to do more work.

A significant issue related to effective instruction is the extent to which available incentives can be used to enhance student achievement. Data and methodology from this study and the earlier study with introductory psychology students can facilitate the selection and use in instruction of incentives that are most preferred by students. These data also provide an initial base for selecting preferred incentives to use in experimental research investigating the effects of such incentives on student achievement.

References

Anderson, R. C. Personal communication, April 1975.

Bebeau, M. J., Eubanks, J. L., & Sullivan, H. J. Incentive preferences of introductory psychology students. Manuscript submitted for publication, 1976.

Edwards, A. L. Techniques of attitude scale construction. New York: Appleton, Century, Crofts, Inc., 1957.

Page, E. B. Teacher comments and student performance. A seventy-four classroom experiment in school motivation. Journal of Educational Psychology, 1958, 49, 173-181.

Sullivan, H. J., Schutz, R. E., & Baker, R. L. Effects of systematic variations in reinforcement contingencies on learner performance. American Educational Research Journal, 1971, 8, 135-142.

☆U.S. GOVERNMENT PRINTING OFFICE: 1977—771-057/32